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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/749,920	12/29/2000	Arne Simonsson	040010-906	6815

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ERICSSON INC.
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EXAMINER

PAN, YUWEN

ART UNIT	PAPER NUMBER
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2682

DATE MAILED: 09/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/749,920

Applicant(s)

SIMONSSON ET AL.

Examiner

Yuwen Pan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 December 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-64 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-64 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1,10-21,33,42-53 are rejected under 35 U.S.C. 102(b) as being anticipated by Whinnett et al (US005625875).

With respect to claims 1 and 33, Whinnett discloses a method and apparatus for improving reliability and communication quality in a cellular radio communication system which includes at least a first radio base station having associated radio channels with uplinks and downlinks using different carrier frequencies (see column 1 and line 54-column 2 and line 14), comprising:

Determining whether one of a first uplink or a first downlink of a first radio channel is subject to a Rayleigh fading dip, the first radio channel being used during a current communication segment for communications between the first radio base station and a first radio terminal; and determining whether to execute a countermeasure in order to counteract the negative influences of Rayleigh fading dip, if it is determined that one of the first uplink or the first downlink is subject to a Rayleigh fading dip (see column 3 and lines 20-38, column 4^{lines} ~~and~~ 10-55).

With respect to claims 10 and 42, Whinnett further discloses the determining of whether one of the first uplink or the first downlink is subject to a Rayleigh fading including:

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Obtaining a quality estimate of the first uplink (see column 3 and lines 20-23);

Determining a quality estimate of the quality estimate of the first uplink whether the communication quality of the first uplink is acceptable (see column 3 and line 21-37);

Obtaining a measurement of a first downlink signal strength received by the first radio terminal (see column 4 and lines 10-31);

Determining in dependence of the measured first downlink signal strength is acceptable (see column 33-36); and

Determining that the first uplink is subject to a Rayleigh fading dip, if the communication quality of the first uplink is not acceptable and the first downlink signal strength is acceptable (see column 37-56).

With respect to claims 11 and 43, Whinnett further discloses obtaining a quality estimate of the first downlink; determining in dependence of the quality estimate of the first downlink whether the communication quality of the first downlink is acceptable (see column 4 and lines 10-32);

Obtaining a measurement of a first uplink signal strength received by the first radio base station; determining in dependence of the measured first uplink signal strength whether the first uplink signal strength is acceptable (see column 3 and lines 20-29); and

Determining that the first downlink is subject to a Rayleigh fading dip, if the communication quality of the first downlink is not acceptable and the first uplink signal strength is acceptable (see column 3 and lines 24-40).

With respect to claims 13 and 45, Whinnett further discloses obtaining a quality estimate of the first downlink; determining in dependence of the quality estimate of the first downlink

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whether a communication quality of the first downlink is acceptable; an determining to execute the countermeasure, if the first downlink is subject to a Rayleigh fading dip and the communication quality of the first downlink is not acceptable (see column 4 and lines 10-55).

With respect to claims 14 and 46, Whinnett further discloses obtaining a quality estimate of the first uplink (see column 3 and lines 20-29); determining in dependence of the quality estimate of the first uplink whether a communication quality of the first uplink is acceptable (see column 3 and lines 30-37); determining when information is sent over the first uplink; and determining to execute the countermeasure, if information is sent over the first uplink while the first uplink is subject to a Rayleigh fading dip and the communication quality of the first uplink is not acceptable (see column 3 and lines 50-56).

With respect to claim 15 and 47, Whinnett further discloses obtaining a quality estimate of the first downlink; determining in dependence of the quality estimate of the first downlink whether a communication quality of the first downlink is acceptable; determining when information is sent over the first downlink; and determining to execute the countermeasure, if information is sent over the first downlink while the first downlink is subject to a Rayleigh fading dip and the communication quality of the first downlink is not acceptable (see column 4 and lines 10-32).

With respect to claim 16 and 48, Whinnett further discloses the determining whether to execute the countermeasure, if it is determined that the first uplink is subject to a Rayleigh fading dip (see column 3 and lines 20-37).

With respect to claim 17 and 49, Whinnett further the determining whether to execute the countermeasure, if it is determined that the first downlink is subject to a Rayleigh fading dip (see column 4 and lines 10-48).

With respect to claims 18 and 50, Whinnett further discloses the determining whether to execute the countermeasure includes determining whether to perform a handoff from the first radio channel (see column 3 and lines 38-42).

With respect to claim 19 and 51, Whinnett further discloses selecting a new channel to which handoff is to be performed, if it is determined to perform a handoff from the first radio channel; and performing handoff from the first radio channel to the new channel (see column 3 and lines 38-42 and column 4 and lines 37-48).

With respect to claim 20 and 52, Whinnett further discloses determining a set of channels, which are available for handoff; and selecting the new channel from the set of channels (see column 3 and lines 38-42 and column 4 and lines 37-48).

With respect to claims 21 and 53, Whinnett further discloses he determining of the set of channels includes determining the set of channels to include at least one channel associated with the first radio base station (see column 5 and lines 28-35).

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 26-32 and 58-64 are rejected under 35 U.S.C. 102(e) as being anticipated by Soininen et al (US006434130B1).

With respect to claims 26 and 58, Soininen discloses a method and apparatus for determining whether one of a first uplink or first downlink of a first radio channel is subject to a

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Rayleigh fading, the first channel being used during a current communication segment for communication between a first radio base station and a first radio terminal, comprising: obtaining a gain of first uplink and downlink; and comparing the gain of the first uplink to the gain of the first downlink in order to deduce whether one of the first uplink or the first downlink is subject to a Rayleigh fading dip (see column 1 and line 62-column 2 and line 8, column 3 and lines 8-51).

With respect to claims 27 and 59, Soininen discloses determining an offset (F) associated with a difference between the gain of the first uplink and the gain of the first downlink during the current communication segment; and determining whether one of the first uplink or first downlink is subject to a Rayleigh fading dip by monitoring how the difference between the gain of the first uplink and the gain of the first downlink deviates from the offset (see column 1 and line 63-column 2 and line 8).

With respect to claims 28-31 and 60-63, Soininen doesn't teach establishing an average of the difference power gain between uplink and downlink. Taking an average of random numbers is well known in the art. It would have been obvious to one ordinary skill in the art at the time the invention was made to find a mean value in order to get a better estimation.

With respect to claim 32 and 64, Soininen further discloses monitoring includes determining that the first downlink is subject to a Rayleigh fading, if the difference between the gain of the first uplink and the gain of the first downlink exceeds the offset by more than a first predetermined value and determining that the first uplink is subject to a Rayleigh fading, if the difference between the gain of the first uplink and the gain of the first downlink falls between the offset by more a second predetermined value (see column 11 and lines 8-column 12 and line 58).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2,34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Whinnett et al (US005625875) in view of Bustamante et al (US Patent# 4,752,967).

With respect to claim 2 and 34, Whinnett discloses an analogous method and apparatus as recited in claim 1 and 33. Whinnett doesn't discloses obtaining a gain of first uplink and downlink; and comparing the gain of the first uplink to the gain of the first downlink in order to deduce whether one of the first uplink or the first downlink is subject to a Rayleigh fading dip.

Bustamante discloses obtaining a gain of first uplink and downlink; and comparing the gain of the first uplink to the gain of the first downlink in order to deduce whether one of the first uplink or the first downlink is subject to distortion and fading from the surrounding environment (see column 1 and lines 18-26, column 2 and lines 31-63).

It would have been obvious to one ordinary skill in the art at the time the invention was made to combine the teaching of Bustamante with Whinnett's method and apparatus such that received error signal is easily detected and further action would be determined.

6. Claims 3-9,12,22-25 and 35-41,44,54-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Whinnett et al (US005625875) and Bustamante et al (US Patent# 4,752,967) as applied to claims 1,33,2,34 above, and further in view of Soininen et al (US006434130B1).

With respect to claims 3 and 35, combination of Bustamante and Whinnett doesn't disclose determining an offset (F) associated with a difference between the gain of the first uplink and the gain of the first downlink during the current communication segment; and determining whether one of the first uplink or first downlink is subject to a Rayleigh fading dip by monitoring how the difference between the gain of the first uplink and the gain of the first downlink deviates from the offset.

Soininen discloses determining an offset (F) associated with a difference between the gain of the first uplink and the gain of the first downlink during the current communication segment; and determining whether one of the first uplink or first downlink is subject to a Rayleigh fading dip by monitoring how the difference between the gain of the first uplink and the gain of the first downlink deviates from the offset (see column 1 and line 63-column 2 and line 8).

It would have been obvious to one ordinary skill in the art at the time the invention was made to combine the teaching of Soininen with Bustamante and Whinnett such that the telecommunication system is able to determine whether the links are subject to the fast fading quickly and apply proper hand off (see column 2 and lines 9-24).

With respect to claims 4-7 and 36-39, Bustamante doesn't teach establishing an average of the difference power gain between uplink and downlink. Taking an average of random numbers is well known in the art. It would have been obvious to one ordinary skill in the art at the time the invention was made to find a mean value in order to get a better estimation.

With respect to claims 8,9 and 40, 41, Soininen further discloses monitoring includes determining that the first downlink is subject to a Rayleigh fading, if the difference between the

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gain of the first uplink and the gain of the first downlink exceeds the offset by more than a first predetermined value and determining that the first uplink is subject to a Rayleigh fading, if the difference between the gain of the first uplink and the gain of the first downlink falls between the offset by more a second predetermined value (see column 11 and lines 8-column 12 and line 58).

With respect to claims 12 and 44, Whinnett further discloses obtaining a quality estimate of the first uplink; determining in dependence of the quality estimate of the first uplink whether a communication quality of the first uplink is acceptable; and determining to execute the countermeasure, if the first uplink is subject to a Rayleigh fading and the communication quality of the first uplink is not acceptable (see column 3 and lines 50-56).

With respect to claims 22 and 54, Soininen further discloses a method and apparatus wherein the cellular radio communication system includes at least a second radio base station having essentially the same location as the first radio base station, and wherein the determined of the set of channels includes determining the set of channels to include at least one channel associated with the second radio base station (see column 2 and lines 25-38).

With respect to claim 23 and 55, Whinnett further discloses a method and apparatus wherein the selecting of the new channel from the set of channels includes, if the first uplink is subject to a Rayleigh fading, selecting from the set of channels the channel having an uplink using a carrier frequency which differs the most from the carrier frequency of the first uplink without being essentially an integer multiple of the carrier frequency of the first uplink (see column 3 and line 39-column 4 and line 3).

With respect to claim 24 and 56, Whinnett further discloses a method and apparatus wherein the selecting of the new channel from the set of channels includes, if the first downlink

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is subject to a Rayleigh fading, selecting from the set of channels the channel having a downlink using a carrier frequency which differs the most from the carrier frequency of the first downlink without being essentially an integer multiple of the carrier frequency of the first downlink ((see column 3 and line 39-column 4 and line 3).

With respect to claim 25 and 57, cited prior arts do not disclose determining whether to switch a transmitting antenna. The examiner takes "Official Notice" of the fact that is notoriously well-known in the art to switch a transmitting antenna in order to utilize an intra-handoff with in the same base station.

Therefore, it would have been obvious to one ordinary skill in the art at the time the invention was made to switch a transmitting antenna such that the intra-handoff is utilized to avoid collision or fading.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yuwen Pan whose telephone number is 703-305-7372. The examiner can normally be reached on 8-5 M-F.

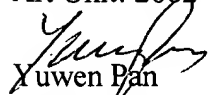
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on 703-308-6739. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-0377.

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Xuwen Pan

September 3, 2003



**CHARLES APPIAH
PRIMARY EXAMINER**